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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,290	08/31/2004	Jurgen Jean Louis Hoppenbrouwers	NL 020164	6737

24737 7590 11/15/2006

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER

SHENG, TOM V

ART UNIT PAPER NUMBER

2629

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/506,290

Applicant(s)

HOPPENBROUWERS ET AL.

Examiner

Tom V. Sheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-16 and 21 is/are rejected.
- 7) ☒ Claim(s) 7, 8 and 17-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2006 and 31 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 18 (the second claim 18), 19 and 20 are objected to because of the following informalities: numbering of claim 18 is duplicated. Appropriate correction is required. In below prosecution, the Examiner considers the second claim 18 as claim 19, current claim 19 as claim 20, and current claim 20 as claim 21 for clarity.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 9-13 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Kang et al. (US 6,653,795 B2), hereinafter Kang.

As for claim 1 and associated claim 10, Kang teaches a flat panel display apparatus comprising:

plasma discharge cells (one plasma discharge cell in fig. 1) that include sustain electrodes (common electrode 30Z) and scan electrodes (scanning electrode 30Y; column 1, lines 29-33); and

a drive circuit (X driver; fig. 13) for providing data arranged in subfields to the discharge cells (display is driving by subfields for each frame as shown; fig. 5), which includes an energy recovery circuit (IC41; fig. 14), and

means for activating the energy recovery circuit only for a part of the total number of subfields (selective writing address intervals are applied during subfields SF1 through SF6 and selective erasing address intervals are applied during subfields SF7 through SF12; column 7, line 56, to column 8, line 10). See the difference in energy recovery in column 29, line 39, through column 33, line 63, with respect to fig. 14.

As for claim 2, the embodiment of fig. 5 shows selective writing address intervals being applied with SF1 through SF6, which have on average a lower weight than the rest.

As for claim 3, the embodiment of fig. 5 shows selective writing address intervals being applied with SF1 through SF6, which all have lower weights than the rest.

As for claim 9, the embodiment of fig. 5 shows six subfields are selected for which energy recovery is applied.

As for claim 11, Kang teaches a display comprising:

a plurality of plasma discharge cells (one plasma discharge cell in fig. 1; column 1, lines 29-33), each discharge cell of the plurality of discharge cells including a plurality of subfields (display of each discharge cell is driven by subfields for each frame as shown; fig. 8); and

an energy recovery circuit (IC41; fig. 14) that is configured to recover energy from select subfields of the plurality of subfields (selective writing address intervals are

applied during subfields SF1 through SF5 and selective erasing address intervals are applied during subfields SF6 through SF11; column 12, lines 29-64), the select subfields being fewer than a total number of the subfields of the discharge cell (SF1-SF5 consist of 5 subfields while SF6-SF11 consist of 6 subfields).

As for claim 12, the embodiment of fig. 8 shows selective writing address intervals being applied with SF1 through SF5, which have on average a lower weight than the rest.

As for claim 13, the embodiment of fig. 8 shows selective writing address intervals being applied with SF1 through SF5, which all have lower weights than the rest.

As for claim 21, the embodiment of fig. 8 shows five subfields are selected for which energy recovery is applied.

4. Claims 4-6 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang as applied to claim 1 above, and further in view of Salavin et al. (US 6,124,676; hereinafter Salavin).

As for claims 4 and 14, Kang teaches scanning electrodes 30Y, common electrodes 30Z and address electrodes 20X all being straight, as shown in fig. 1 and fig. 13. However, Kang does not teach that the data electrodes (also known as address electrodes in PDP) are positioned in a zigzag configuration.

Salavin teaches a plasma display panel (fig. 2a). Specifically, each row electrode (Y1, Y2 ...) is in the form of a zig-zag in order to pass the color recesses Ep1,

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Ep2, Ep3 of each pixel P (column 1 line 66 through column 2 line 9 and column 6 lines 19-27). One of ordinary skill in the art recognizes that this distribution of recesses (i.e. color subpixels) and the use of a zigzag electrode are advantageous in improving light efficiency without degrading its contrast (fig. 2a; column 5 lines 1-21). Moreover, use of a zigzag electrode naturally eliminates the need of two parallel run sub-electrodes. Finally, even though it is the row/scan electrode being in a zigzag manner, it could alternatively be done with the data/address electrode being the one formed in a zigzag manner, since both ways are functionally equivalent with no one way being harder to implement than the other way.

Therefore, it would have been obvious to incorporate the teaching of Salavin in a modified manner such that the data/address electrodes are positioned in a zigzag manner passing through respective color subpixels, due to the advantageous in improving light efficiency without degrading contrast.

As for claims 5 and 15, as modified by Salavin, each data/address electrode is alternately coupled in subsequent rows to a cell (i.e. subpixel/recess) of a pixel in a first column and to a cell of a pixel (same pixel) in a column adjacent to the first column. That is, as modified, the cells/subpixels are alternately distributed between two columns and are accessed by a common address/data electrode formed in a zigzag manner.

As for claims 6 and 16, since claims 1, 5 and 6 do not recite the claimed invention as for color display, it is understood that in a monochromatic display, the zigzag coupled cells would be for grayscale display only and thus of the same "color".

Allowable Subject Matter

5. Claims 7, 8 and 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: none of the prior arts of record teaches the limitations, "wherein the display apparatus includes a discriminator having means for choosing the part of the subfields during which the energy recovery circuit is activated on the basis of the data to be displayed" of claim 7 and "a discriminator that is configured to select the select subfields based on display data" of claim 17. Claim 8 is dependent on claim 7 and claims 18-20 are dependent on claim 17.

Response to Arguments

7. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V. Sheng whose telephone number is (571) 272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Sheng

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read "Amr A. Awad", with a large, sweeping flourish at the end.